Entergy

Entergy Operations, Inc.
River Bend Station
5485 U. S. Highway 61N
St. Francisville, LA 70775
Tel 225 381 4374
Fax 225 381 4872
eolson@entergy.com

Eric W. Olson
Site Vice President

RBG-47266

July 23, 2012

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Subject: Licensee Event Report 50-458 / 2012-003-00
River Bend Station – Unit 1
Docket No. 50-458
License No. NPF-47

RBF1-12-0099

Dear Sir or Madam:

In accordance with 10 CFR 50.73, enclosed is the subject Licensee Event Report. This document contains no commitments. If you have any questions, please contact Mr. Joseph Clark at 225-381-4177.

Sincerely,

Eric W. Olson

EWO/dhw

Enclosure

IE22
NRR

cc: U. S. Nuclear Regulatory Commission
Region IV
1600 East Lamar Blvd.
Arlington, TX 76011-4511

NRC Sr. Resident Inspector
P. O. Box 1050
St. Francisville, LA 70775

INPO Records Center
E-Mail (MS Word format)

Ms. Tracie Lowery
Public Utility Commission of Texas
1701 N. Congress Ave.
Austin, TX 78711-3326

Department of Environmental Quality
Office of Environmental Compliance
Radiological Emergency Planning and Response Section
JiYoung Wiley
P.O. Box 4312
Baton Rouge, LA 70821-4312

NRC FORM 366 (10-2010) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2013

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
River Bend Station – Unit 1	05000 - 458	1 OF 3

4. TITLE

Reactor Scram Following a Loss of Main Reactor Feedwater Pump Due to Electrical Fault

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									n/a	05000
05	24	2012	2012	003	00	07	23	2012	FACILITY NAME: n/a	DOCKET NUMBER: 05000

9. OPERATING MODE

1

10. POWER LEVEL

32

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☒ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER *(Include Area Code)*
Joseph A. Clark, Manager – Licensing	225-381-4177

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
E	EA	86	GE	yes					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On May 24, 2012, at 3:40 p.m. CDT, a manual reactor scram was initiated in response to the loss of the running reactor feedwater pump. The plant was operating at approximately 32% power. The reactor core isolation cooling system was manually started to provide high pressure makeup to the reactor. The high pressure core spray system was manually started during the recovery from the event, but was not aligned to the reactor vessel. An electrical transient caused by the failure of a lockout relay resulted in the main supply breaker to the "B" 13.8kv switchgear to trip. Reactor recirculation pump "B" tripped due to the loss of its power source; the "A" reactor recirculation pump continued to operate in slow speed. The electrical transient also caused a loss of power to all main condenser circulating water pumps and normal service water pumps, necessitating the manual closure of the main steam isolation valves. The standby service water system actuated as designed in response to low normal service water pressure. The operators manually operated selected SRVs for reactor pressure control and for reactor cooldown. Personnel in the turbine building reported the presence of smoke in the area of the feedwater pumps, but no actual fire was observed. There were no safety-related systems out of service at the time. This event is being reported in accordance with 10CFR50.73(a)(2)(iv)(A) as an actuation of the reactor protection system and the standby service water system. This event was of low safety significance to the health and safety of the public.

REPORTED CONDITION

On May 24, 2012, at 3:40 p.m. CDT, a manual reactor scram was initiated in response to the loss of the running reactor feedwater pump (**P**). The plant was operating at approximately 32% power at the time.

The reactor core isolation cooling system (BN) (RCIC) was manually started to provide high pressure makeup to the reactor. The high pressure core spray (BG) (HPCS) system was manually started during the recovery from the event, but was not aligned to the reactor vessel.

An electrical transient caused by the failure of a lockout relay (**86**) resulted in the main supply breaker (**BKR**) to the "B" 13.8kv switchgear (EA) to trip. Reactor recirculation (AD) pump "B" tripped due to the loss of its power source; the "A" reactor recirculation pump continued to operate in slow speed. The electrical transient also caused a loss of power to all main condenser circulating water pumps (NN) and normal service water pumps (KG), necessitating the manual closure of the main steam isolation valves. The standby service water system (BS) actuated as designed in response to low normal service water pressure.

No reactor safety-relief valves (SRVs) operated automatically as a result of the scram. The operators manually operated selected SRVs for reactor pressure control and for reactor cooldown. The residual heat removal system (BO) was manually started in the suppression pool cooling mode to support RCIC operation, as well as for control of suppression pool level.

Personnel in the turbine building reported the presence of smoke in the area of the feedwater pumps, but no actual fire was observed.

This event is being reported in accordance with 10CFR50.73(a)(2)(iv)(A) as an actuation of the reactor protection system (JC) and the standby service water system. There were no safety-related systems out of service at the time of the event.

INVESTIGATION and CAUSAL ANALYSIS

At the time of the event, the "C" reactor feedwater pump was in service. When the operator started the "B" feedwater pump, an electrical fault occurred at the pump motor. The lockout relay on the pump's feeder breaker failed to trip the breaker, and the main supply breaker to the "B" 13.8kV switchgear tripped to clear the fault. This caused the loss of power to the "C" pump, as well as switchgears supplying the circulating water system and the normal service water system.

The inspection of the terminal box on the "B" feedwater pump determined that fault occurred due to an inadequately crimped terminal lug on one of the three current transformers. The motor (**MO**) had been rewound by a vendor in 2008. When the motor was returned, new lugs were

supplied by the vendor to be installed onsite. The lugs were installed by a local vendor. The investigation found that the lugs were too large for the application. Additionally, the crimping tool used for the installation did not fully compress the lugs, leaving an inadequately bonded connection.

The lockout relay installed on the breaker for the "B" feedwater pump is a General Electric HEA 61. The analysis of this event found that the lockout relay failed to operate as designed due to age-related mechanical binding and a possible coil failure. This condition resulted from an inadequate preventative maintenance program for the relays and a design issue with the trip plate.

Prior to plant restart, similar lockout relays were functionally tested. Additional failed relays were discovered (none in safety-related service), and these were replaced.

CORRECTIVE ACTION TO PREVENT RECURRENCE

The preventative maintenance program for lockout relays is being evaluated to develop appropriate changes. A training needs analysis is being conducted for those departments responsible for development and implementation of the preventative maintenance program.

Thermographic imaging will be performed on other large motors potentially susceptible to this same type of lug failure.

These actions are being tracked in the station's corrective action program.

PREVIOUS OCCURRENCE EVALUATION

No previous scrams have occurred with the same root cause as this event. There was a failure of the same type of lockout relay in February 2011.

SAFETY SIGNIFICANCE

No plant parameters requiring the automatic actuation of the emergency diesel generators or the emergency core cooling systems were exceeded. The RCIC system operated properly in response to the operators' manual control and provided high pressure makeup to the reactor. Control of reactor pressure was accomplished by manual actuation of selected SRVs. The plant was placed in cold shutdown. The standby service water system operated as designed. This event was of minimal safety significance to the health and safety of the public.

(NOTE: Energy Industry Component Identification codes are annotated as (**XX**).)